Foundations of Math 10 LG 9 & 10
LINEAR EQUATIONS AND GRAPHS

INTRODUCTION:

Linear equations and their graphs are very useful when seeing how things are related, and are used in almost every career. For some neat examples, check out page 338-339.

LEARNING GUIDE EXPECTATIONS:

On the completion of this learning guide you will be able to:

1) identify the slope and y-intercept of a straight-line graph
2) use slope-intercept form to graph, determine a line's equation, and solve problems
3) convert a linear equation to general form and use it to solve problems
4) use intercepts to graph a line and relate the intercepts to a situation
5) use slope-point form to determine a line's equation, and solve problems
6) identify whether two lines are parallel, perpendicular, or neither
7) write the equation for, and solve problems involving parallel and perpendicular lines.

EVALUATION:

You are ready to progress to the next learning guide when you can demonstrate your understanding of the above expectations. Please refer to your Foundations of Mathematics 10 Marks Record Sheet to determine the assessment.

RESOURCES NEEDED:

Mathematics 10 Text

LEARNING ACTIVITIES:

Expectation 1: identify the slope and y-intercept of a straight-line graph
Expectation 2: use slope-intercept form to graph, determine a line's equation, and solve problems

1. Watch and take notes on instructional video on Slope/Intercept Form of a line.

2. Read the purple boxes on page 341 and the Key Ideas section on page 349. In your Math Journal,
   a) define y-intercept and use a diagram to show where we find it on a graph
   b) state the slope-intercept form of the equation and show where the slope and y-intercept are found in that equation.

3. In the Mathematics 10 text, read Example 1 on page 343. Then do # 1 - 3 on page 349.
4. Read Example 2 on pages 344 -345. Now do #4 - 8 on page 350 -351.
5. In the Mathematics 10 text, read Example 3 (on pages 346 - 347) and Example 4 on page 348. Then do # 9, 10, 12, 13, 17, 18, 19 on pages 351 - 356.
6. For extra practice, click here. For the answers to the extra practice, click here.

Expectation 3: convert a linear equation to general form and use it to solve problems
Expectation 4: use intercepts to graph a line and relate the intercepts to a situation

1. Watch and take notes on instructional video on General Form of a Line.

2. Read the purple boxes on page 358 and Link the Ideas on page 359. In your Math Journal,
   a) write the general form of the equation of a line and list the requirements for 'A'
   b) define x-intercept and use a diagram to show where we find it on a graph.

3. In the Mathematics 10 text, read Example 1 on page 359. Then do # 1, 2 on page 365.
4. In the Mathematics 10 text, read Example 2 on page 360. Then do # 3 on page 365.
5. In the Mathematics 10 text, read Example 3 on page 361. Then do # 4 - 8 on page 365 - 366.
6. In the Mathematics 10 text, read Example 4 on pages 362 - 363. Then do # 8, 10, 13a, 14, 19 on pages 366 - 369.
7. For extra practice, click here. For the answers to the extra practice, click here.

Expectation 5: Use slope-point form to determine a line's equation, and solve Problems

1. Watch and take notes on instructional video on Slope Point Form of a Line.

2. Read the Link the Ideas on page 372 and the Key Ideas on page 376. In your Math Journal state the slope-point form of the equation of a line.

3. In the Mathematics 10 text, read Examples 1 and 2 on pages 372 -374. Then do #1- 8, 11, 12, 1 4, 17 on pages 377 - 379.
4. For extra practice, click here. For the answers to the extra practice, click here.

Expectation 6: identify whether two lines are parallel, perpendicular, or neither
Expectation 7: write the equation for, and solve problems involving parallel and perpendicular lines.

1. Watch and take notes on instructional video on Parallel and Perpendicular Lines.

2. Read the Link the Ideas on page 385.
In your Math Journal,
   a) describe what parallel lines are, making special note of how the slopes of parallel lines are related. Draw a diagram of parallel lines clearly showing their slopes.

   b) describe what perpendicular lines are, making special note of how their slopes are related. Draw a diagram of perpendicular lines clearly showing their slopes.

3. In the Mathematics 10 text, read Example 1 on page 386.
Then do #1- 5, on pages 390 -391.
4. In the Mathematics 10 text, read Examples 2 and Example 3 on pages 387 - 389.
Then do #6 – 17, 19, 20, 23, 24, 25, 26 on pages 391 -392.
5. For extra practice, click here. For the answers to the extra practice, click here.

REVIEW AND CHALLENGE

1. In the Mathematics 10 text, complete Chapter 7 Review questions # 1 – 17 on pages 396 – 398.

PRACTICE QUIZZES

Practice quiz #1
Practice quiz #2
Practice quiz #3
Practice quiz #4
Practice quiz #5